Patent claims:

1. Safety device (19) for limiting of current and voltage of an electrical consumer (15) connected downstream to the safety device (19), for example of a measurement value transmitter, with at least one input connector (8) and one output connector (16) as well as input connector and output connector (10, 17) of a common line (12), for example a ground line, wherein the safety device (19) includes at least voltage and current limiting device (7,13, 14), such as a Zener barrier and comprising at least one protective device (F1) as a fusible fuse, a voltage limiting device (D3) referring to the common line (12), a current limiting device (R6) connected to the output of the voltage limiting device (D3) as well as a further protective circuit (20), which further protective circuit (20) is disposed in front of the voltage and current limiting device (7,13, 14), wherein the further protective circuit (20) exhibits a field effect transistor (Q1) as a switching and/or regulating transistor, wherein the source drain leg (S-D) of the field effect transistor (Q1) is disposed between the input connector (8) and the voltage and current limiting device (7,13, 14) and

wherein the gate (G) is connected to the common line (12) through a resistor (R4) for feeding in the control voltage of the field effect transistor (Q1), wherein a second transistor (Q2) is connected to the input connector (8) and to the gate (G) of the switching and/or regulating transistor (Q1), wherein the collector (Q23) is connected to the gate (G) of the switching and/or regulating transistor (Q1) for influencing the control voltage of the switching and/or regulating transistor (Q1), and wherein the voltage (U9,11) is fed back to the base (Q22) of the second transistor (Q2) over a feedback resistor (R3) between the outputs (9,11) of the further protective circuit (20) and after the switching and/or regulating transistor (Q1) and after the drain (D) of the switching and/or regulating transistor (Q1), wherein a voltage sensor circuit (D1,R5) is disposed between the base (Q22) of the second transistor (Q2) and the common line (12) for voltage detection, or

Sub A1

a longitudinal resistor (R1) as a current sensor is disposed between the input connector (8) and the source (S) of the switching and/or regulating transistor (Q1) for current capturing.

2. Safety device (19) according to claim 1 characterized in that the longitudinal resistor (R1) as a current sensor and the voltage sensor circuit (D1,R5) are present simultaneously both for voltage detection as well as for current limitation.

3. Safety device (19) according to claim 1 or 2 characterized in that the voltage sensor circuit (D1,R5) comprises a Zener diode or Diac diode (D1) and a resistor (R5) connected in series.

Sub A2

4. Safety device (19) according to claim 1 characterized in that the feedback current is adjusted by way of the feedback resistor (R3) or the control and regulating circuit such that in case of over load there results a regulating down of the load current to a minimum value and a switching off of the current in the voltage and current limiting device (7,13, 14) is performed only upon application of a voltage (U8-10) larger than the input nominal voltage (U_{EN}) and wherein an automatic switching on again is

given upon following lowering of the supply voltage (U_E) to the input nominal voltage (U_{EN}).

5. Safety device (19) according to claim 1 characterized in that a resistor (R2) is disposed between the base (Q22) of the transistor (Q2) and the source (S) of the switching and regulating transistor (Q1) in the further protective circuit (20) for reducing the feedback current.

6. Safety device (19) according to one of the preceding claims, characterized in that the reference voltage or, respectively, the feedback voltage (U9-11;UA) of the feedback resistor (R3) is tappable both immediately after the drain (D) of the switching and/or regulating transistor (Q1) as well as at any arbitrary circuit point of the current path between the line points 9 and 16 and that the reference voltage or, respectively, the feedback voltage (U9-11;UA) of the feedback resistor (R3) is fed back to the base (Q22) of the second transistor (Q2).

7. Safety device (19) according to one of the preceding claims characterized in that a Zener diode (D2) is disposed between the gate (G) and the source (S) of the switching and/or regulating transistor (Q1) parallel to the gate (G) and to the source (S) of the switching and/or regulating transistor (Q1) for protecting the gate source leg (G-S).

Sub A7

8. Safety device (19) according to one of the preceding claims characterized in that a Zener diode (D4) is connected in series with the resistor (R4) for reducing the gate control voltage of the switching and/or regulating transistor (Q1).

9. Safety device (19) according to claims 7 and/or 8 characterized in that the Zener diodes D2 and/or D4 are integral components of the switching and/or regulating transistor (Q1).

10. Safety device (19) according to claim 1 characterized in that the feedback resistor (R3) is replaced by a control or regulating circuit for

adjusting the feedback current independent of the output voltage or, respectively, of the supply voltage.

11. Safety device (19) according to claim 10 characterized in that the control or regulating circuit is a constant current circuit.

12. Safety device (19) according to one of the preceding claims characterized in that the safety device (19) includes a reset device, for example a key, for switching on again in the further protective circuit (20) after triggering of the switching off of the current in the voltage and current limiting device (7,13, 14).

13. Safety device (19) according to claim 1 characterized in that the second transistor (Q2) is an electronic relay or field effect transistor or a thyristor.

14. Safety device (19) according to claim 1 characterized in that a bipolar transistor or an electronic relay are employed instead of the field effect transistor.